

Notice of Allowability

Application No.

10/824,305

Examiner

William C. Choi

Applicant(s)

SCHENKER, RICHARD

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 8/10/2005.
2. ☒ The allowed claim(s) is/are 10,12,14-17,24,25 and 29-42.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


RICKY MACK
SUPERVISORY PATENT EXAMINER

All claims pending thus being allowable, prosecution on the merits is closed in this application. A statement of the examiner's reasons for allowance is provided in the paragraphs, which follow below.

REASONS FOR ALLOWANCE

Claims 10, 12, 14-17, 24, 25 and 29-42 are allowed.

The instant application is deemed to be directed to a nonobvious improvement over the invention of Niki et al (U.S. 5,633,959), as being a representative example in the art to which the instant invention pertains. In particular, said improvement provides systems and techniques, which improve the resolution capability of a lithography system of a given numerical aperture.

More specifically, independent claim 10 is drawn to a system comprising: a lithography system comprising a polarization and a stress modulator as claimed, specifically wherein the stress modulator is configured to apply stress to an outer surface of the polarization modulator to obtain a polarization profile at an imaging plane wherein the polarization profile exhibits substantially azimuthal symmetry (Claim 10, lines 10-14).

Similarly, independent claim 12 is drawn to a lithography system comprising a polarization and a stress modulator, wherein the stress modulator is configured to apply stress to the polarization modulator as claimed, specifically wherein the lithography system comprises an immersion lithography system (Claim 12, lines 9-10).

Independent claim 14 is drawn to a system, comprising: a lithography system, comprising a stress modulator in communication with a polarization modulator as claimed, specifically wherein the stress modulator applies normal stress on a curved surface of the polarization modulator using expansion (Claim 14, lines 8-11).

Independent claim 15 is drawn to a system, comprising: a lithography system, comprising a stress modulator in communication with a polarization modulator as claimed, specifically wherein the stress modulator applies normal stress on a curved surface of the polarization modulator by heating at least one of the stress modulator and the polarization modulator (Claim 15, lines 8-12).

Independent claim 16 is drawn to a system, comprising: a lithography system, comprising a stress modulator in communication with a polarization modulator as claimed, specifically wherein the stress modulator applies normal stress on a curved surface of the polarization modulator by cooling at least one of the stress modulator and the polarization modulator (Claim 16, lines 9-13).

Independent claim 17 is drawn to a lithography system comprising a polarization and a stress modulator, wherein the stress modulator is configured to apply stress to the polarization modulator as claimed, specifically further comprising another polarization and another stress modulator, wherein the another stress modulator is configured to apply stress to the another polarization modulator (Claim 17, lines 10-15).

Independent claim 24 is drawn to a method of modifying the polarization of light, comprising: applying stress to a polarization modulator as claimed, specifically comprising transmitting light of a second polarization state different from a first

polarization state from the polarization modulator and forming a pattern on a substrate using the transmitted light (Claim 24, lines 10-14).

Independent claim 25 is drawn to a method of modifying the polarization of light comprising applying stress to a polarization modulator and modifying the polarization of light within the polarization modulator as claimed, specifically further comprising detecting a parameter related to one or more characteristics of the light and forming a pattern on a substrate using the transmitted light, wherein the parameter is based on the pattern (Claim 25, lines 12-17).

Independent claim 29 is drawn to an apparatus comprising a component of a lithography system, including a stress modulator in communication with a polarization modulator as claimed, specifically wherein the stress modulator applies normal stress on a curved surface of the polarization modulator to induce birefringence and to change the polarization of light transmitted through the polarization modulator (Claim 29, lines 9-12).

Finally, claim 30 is drawn to a polarization control apparatus comprising a polarization and a stress modulator and a controller configured to receive a signal based on a parameter related to one or more characteristics of the transmitted light and is configured to control the stress as claimed, specifically wherein said apparatus further comprises a substrate including a pattern formed using the transmitted light, wherein the parameter is based on the pattern (Claim 30, lines 14-16).

The prior art taken either singly or in combination fails to anticipate or fairly suggest the limitations of applicant's independent claims, in such a manner that a

rejection under 35 U.S.C. 102 or 103 would be proper. The claimed invention is therefore considered to be in condition for allowance as being novel and nonobvious over prior art.

OTHER REMARKS/INFORMATION

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (571) 272-2324. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on (571) 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free).

W.C.

William Choi
Patent Examiner
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September 14 2006



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